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The goal of this study is to use Silicon nanoparticles (Si NPs) as a nanothermometer in non-polar liquids like lubricants. Toward this end, Si NPs was synthesized by the electrochemical anodization of a bulk material. Modification of their surface chemistry by hydrosilylation reaction was then realized in order to disperse them homogeneously in non-polar liquids. The centrifugation process of the NPs in solution was optimized in order to obtain a single size distribution. Characterization of these NPs by TEM, and FTIR spectroscopy will be presented. The NPs fluorescence properties were studied using steady state and time resolved photoluminescence. Fig 1 shows the spectral evolution with temperature from 273 K to 373 K of alkyl-terminated Si NPs dispersed in squalane. The different mechanisms responsible for the spectral temperature variation will be discussed in order to explain the important thermal sensitivity of the silicon nanoparticles photoluminescence. Their application as nano-thermometers is proposed.

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